



# MINGDONG LI

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## EDUCATION

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**The Hong Kong University of Science and Technology** Sep. 2021 - Apr. 2025 (expected)

PhD in Individualized Interdisciplinary Program (Robotics and Autonomous System)

Academy of Interdisciplinary Studies

Computational Cognitive Engineering Lab

Supervisor: Prof. Yiwen WANG, Prof. Qifeng CHEN (co-supervision)

**Zhejiang University**

2018-2021

Master of Mechanical Engineering

The State Key Lab of Fluid Power & Mechatronic Systems

Supervisor: Prof. Yixiong FENG

**Tongji University**

2013-2018

Bachelor of Mechanical Design Manufacture and its Automation

Pilot Sino-German Program for Undergraduate in Mechanical Engineering (Honor Class)

## RESEARCH INTEREST

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Brain-machine Interfaces, Brain-inspired Intelligence, NeuroAI, Product Design

## WORKING PAPER

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1. **Mingdong Li**, Shuhang Chen, Zhiwei Song, Xiang Zhang, Camilo Libedinsky, Rosa So, Yiwen Wang\*. Assessing Modifications of Functional Neural Connectivity in Point Process Filter for Neuroprosthetic Control, *IEEE Transactions on Biomedical Engineering*. (to be submitted)
2. Zhiwei Song, Xiang Zhang, **Mingdong Li**, Jieyuan Tan, Yiwen Wang\*. An Online Knowledge Transfer Framework for Task Learning in Brain-Machine Interfaces, *IEEE Transactions on Neural Systems and Rehabilitation Engineering*. (to be submitted)
3. **Mingdong Li**, Shuhang Chen†, Xiang Zhang, Yiwen Wang\*. Neural Correlation Integrated Adaptive Point Process Filtering on Population Spike Trains, *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 2024. (under revision, †: co-first author)

## PUBLICATION (JOURNAL)

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1. **Mingdong Li**, Shanhe Lou\*, Hao Zheng, Yixiong Feng, Yicong Gao, Siyuan Zeng, Jianrong Tan. A Cognitive Analysis-based Key Concepts Derivation Approach for Product Design, *Expert Systems With Applications*, 2024.
2. **Mingdong Li**, Shanhe Lou\*, Yicong Gao, Hao Zheng, Bingtao Hu, Jianrong Tan. A Cerebellar Operant Conditioning-inspired Constraint Satisfaction Approach for Product Design Concept Generation, *International Journal of Production Research*, 2023.
3. Xuanyu Wu, Zhaoxi Hong\*, Yixiong Feng, **Mingdong Li**, Shanhe Lou, Jianrong Tan. A Semantic Analysis-driven Customer Requirements Mining Method for Product Conceptual Design, *Scientific Reports*, 2022.
4. Yixiong Feng, **Mingdong Li**, Shanhe Lou\*, Yicong Gao, Jianrong Tan. A Digital Twin-Driven Method for Product Performance Evaluation Based on Intelligent Psycho-Physiological Analysis, *ASME Journal of Computing and Information Science in Engineering*, 2021.

## PUBLICATION (CONFERENCE)

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1. **Mingdong Li**, Mingyi Wang, Yiwen Wang\*. An Adaptive Superposition Point Process Model with Neuronal Encoding Engagement Identification, *2024 46th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)*. (Oral)
2. Zixu Wang, Shuhang Chen†, **Mingdong Li**, Yiwen Wang\*. Tracking Dynamic Conditional Neural Correlation during Task Learning, *2024 46th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)*. (Oral, †: co-first author)
3. **Mingdong Li**, Jieyuan Tan, Zhiwei Song, Yiwen Wang\*. Modeling Neural Population Dynamics in a Point Process Filter for Neuroprosthetics Control, *Annual Conference of International Association of Neurorestoratology (IANR) 2024* (Abstract, Poster)
4. **Mingdong Li**, Shuhang Chen, Zhijia Zhao, Yiwen Wang\*. Tracking the Dynamic Functional Neural Connectivity via Conjugate Gradient Optimization, *2023 45th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)*. (Oral)
5. **Mingdong Li**, Shuhang Chen, Xi Liu, Zhiwei Song, Yiwen Wang\*. Modeling Neural Connectivity in a Point-Process Analogue of Kalman Filter, *2022 44th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)*. (Oral)

## PROJECT

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1. Memory encoding analysis, Beijing Tiantan Hospital-HKUST 2024.10-now
  - leading encoding analysis of substantia nigra for Parkinson's Disease
2. Managing surgery of implementing electrodes for rats 2023.9-2024.9
  - organize surgery for more than 30 times
  - surgery tutorials
3. Managing rats behavioral training 2022.9-2023.9
  - organize rat two-lever discrimination training for more than 130 days
  - maintain and update devices for behavioral training and neural signal recording

## ACADEMIC SERVICE

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Reviewer: ISBI2025, NER2025, TIV  
Programme committee, 4th International Workshop on Neural Engineering & Rehabilitation 2023.08  
Programme committee, 3rd International Workshop on Neural Engineering & Rehabilitation 2022.05

## TEACHING AND MENTORING

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TA, EMIA4110 Practical Machine Learning 2024 Spring  
TA, ELEC4130 Machine Learning on Images 2023 Spring  
Mentoring: point process modeling for neural signals (HKUST)

- Tianyi Hu, now undergraduate of University of Science and Technology of China 2024.6-2024.9

Mentoring: surgery of implanting electrodes for rats (HKUST)

- Shicheng Qiu, now HKUST MPhil student 2023.9-2024.9

Mentoring: cognitive analysis, language model, EEG analysis, academic writing (Zhejiang Uni.)

- Xuanyu Wu, now PhD candidate of Zhejiang Uni. 2020.9-2022.9

## INTERNATIONAL COLLABORATION

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Prof. Jose Principe, University of Florida  
Prof. Zahra Monfared, Heidelberg University  
Prof. Camilo Libedinsky, National University of Singapore

## PRIZES AND ACHIEVEMENTS

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DAAD AInet fellowship	<i>2024</i>
NextGen Scholar Award (IEEE Annual International Conference of EMBS)	<i>2024</i>
Zhejiang University Dissertation Year Fellowship (Top 1%)	<i>2021</i>
ZHEJIANG Lab AI Competition (Multiple Objects Tracking track), Excellence Prize	<i>2019</i>
1st prize in No.7 National College Mechanical Design Innovation Competition	<i>2016</i>
1st prize in Shanghai College Mechanical Innovation Competition	<i>2016</i>
Tongji Academic Scholarship, 2nd prize for 2 times and 3rd prize for 1 time	<i>2013-2018</i>

## PERSONAL SKILLS

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Surgery for implementing electrodes into M1 and mPFC of SD Rat  
Establish system for animal behavioral training and neural signal recording  
Coding: Python/Matlab/C++/Pytorch toolbox  
Language: Chinese, English, German